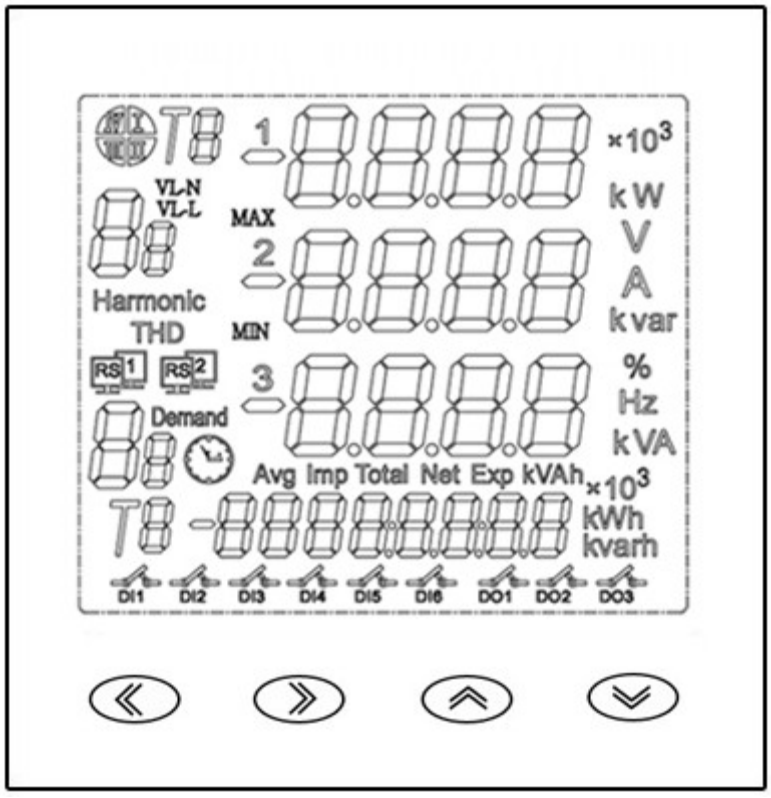
BJ194Y-9SY Power Analyzer

User Manual

Version：1.5



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Read me

When you use BJ194Y-9SY series Power Analyzer, be sure to read this user manual carefully, and be able to fully understand the implications, the correct guidance of operations in accordance with user manual, which will help you make better use of BJ194Y-9SY series Power Analyzer, and help to solve the various problems at the scene.

1. Before the meter turning on the power supply, be sure that the power supply within the provisions of the instrument;

2. When installation, the current input terminal must non-open, voltage input terminals must Non-short circuit;

3. Communication terminal (RS232/RS485 or Ethernet) is strictly prohibited to impose on high pressure;

4. Be sure the instrument wiring consistent with the internal system settings;

5. When communicating with the PC, instrument communication parameters must be consistent with the PC.

- **Please read this user manual carefully**
- **Please save this document**

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1. - SUMMARIZE

BJ194Y-9SY series Power Analyzer is a high-end multifunction power meter. It is the ideal choice for monitoring and measuring of power systems.

It can measure all of the power parameters in power grid:

Current,	Energy,
Voltage,	Power factor,
Frequency,	Current harmonics 2~15 times,
Active power,	Voltage harmonics 2~15 times,
Reactive power,	Voltage and current THD%,
Apparent power,	Multi- tariffs ratio.

And it can also transmit the parameter into 2 route relay output and 4 route switch input, 1 route analog output. For transformers, generators, capacitor banks and motors of the distributed detection, automatic control system, on-line monitoring display.

It can replace the traditional analog or many digital measurement instruments (such as ammeter, voltmeter, power meter, power factor meter, frequency meter, etc.) with the advantages of improving system reliability, making the on-site wiring convenient and reduce system cost.

With serial port, BJ194Y-9SY Power Analyzer can connect with PC; and use Modbus to set programming and read the data.

Based on this power meters, you can simply set up a monitoring system with the IPC and central software.

2. - APPLICATIONS

- ◆ All power parameter measurement;
- ◆ Power factor measurement and control;
- ◆ Energy Measurement;
- ◆ Replacing the three-phase power meter, three phase electricity transmitter;
- ◆ Transformers, generators, capacitors and electric motors distributed detection;
- ◆ Medium and low pressure systems;
- ◆ SCADA, EMS, DCS integrators.

3. - FEATURES

3.1. - Electricity Metering

By means of an internal microprocessor it simultaneously measures:

Parameter	Symbol	A-phase	B-phase	C-phase	Total
Single phase voltage	V	**x**	**x**	**x**	/
*Phase-phase voltage	V	**x**	**x**	**x**	/
Current	A	**x**	**x**	**x**	/
Frequency	Hz	/	/	/	**x**
Power factor	Cos Φ	**xx**	**xx**	**xx**	**x**
Active power	W	**xx**	**xx**	**xx**	**x**
Reactive power	Var	**xx**	**xx**	**xx**	**x**
Active energy	Wh	/	/	/	**x**
Reactive energy	Varh	/	/	/	**x**
Voltage THD	THD%V	**x**	**x**	**x**	**/**
Current THD	THD%A	**x**	**x**	**x**	**/**
Individual harmonic current content (Up to the 15 th)		**x**	**x**	**x**	/

Notes: Phase-phase voltage is Uab, Ubc, Uca, voltage data determined by the different wiring
Available: **x:** Display and communications.
xx: Only can read in RS485 communication

The 194Y-9SY delivers the visualization of parameters listed above by means of LCD type displays. In the main display area shows 4 power parameters, with other display area show the various parameters and state of meter on each page jump.

OTHER FEATURES

- Low-size (96 x 96 mm), panel-mounting meter.
- True R.M.S. measuring system.
- Instantaneous, maximum and minimum values of each measured parameter.
- Energy measurement (indication through a lighting led)
- RS-485 or Ethernet(optional) type communication to a PC.

3.2. - Specifications

1. - Reference standard:

Basic electricity: GB/T13850-1998 (IEC688-1992)

Active power: GB/T17215-2002 (IEC61036:2000)

Reactive power: GB/T17882-1999 (IEC61268:1995)

2- Accuracy standards

Parameter	Accuracy	A phase	B phase	C phase	All	Average
Voltage	0.5%fs	V1	V2	V3		VE
Current	0.5%fs	A1	A2	A3		AE
Active Power	0.5%fs	W1	W2	W3	W	
Reactive Power	0.5%fs	var1	var2	var3	var	
Apparent power	0.5%fs	VA1	VA2	VA3	VA	
Power Factor	0.5%fs	PF1	PF2	PF3	PF	
Active Energy	1%rd				Wh	
Reactive Energy	2%rd				varh	
Frequency	0.05%rd				Hz	

3. - Input

Voltage: Rated 400V (optional 100V)

Current: Rated 5A (optional 1A)

Frequency: 45-65Hz

4. - Load

Voltage: <0.5VA / phase (rated 220V)

Current: <0.5VA / phase (rated 5A)

5. - Overload

Current: 1.2 times rated continuous; 10 seconds for 10 times the rated

Voltage: 1.2 times the rated continuous; 10 seconds for 800V

6. - Dielectric strength

IEC 688 / IEC 255-3 (1989)

2kV AC RMS 1 minute, between input / output / case / power supply

7. - EMC Test

	standard	Test voltage
Electrostatic discharge immunity test:	IEC-61000-4-2 level 4	8Kv
Electrical fast transient burst immunity test	IEC61000-4-4 level 3	Input 1kV; Power supply 2kV
Surge (Shock) immunity test	IEC61000-4-5 level 4	common mode test voltage 4kV

8. - Work environment

Temperature: -20℃~ +60℃

Humidity: RH 20%～95%（No condensation）

9. - Protection

Panel: IP54

Case: IP20

10. - Storage Conditions

Temperature: -25℃～+70℃

Humidity: RH 20%～95%

11. - Working Power

AC 80-265V, 45-65Hz, DC 80-380V

DC 20-60V (Optional)

Maximum power consumption 6W

12. - Dimensions

L × W × H =96mm×96mm×71mm

13. - Installation hole size

L × W = (91+0.8mm) × (91+0.8mm)

4.- INSTALLATION AND START-UP

The manual you hold in your hand contains information and warnings that the user should respect in order to guarantee a proper operation of all the instrument functions and keep it in safety conditions. The instrument must not be powered on and used until its definitive assembly is on the cabinet's door.

If the instrument is not used as manufacturer's specifications, the protection of the instrument will be damaged.

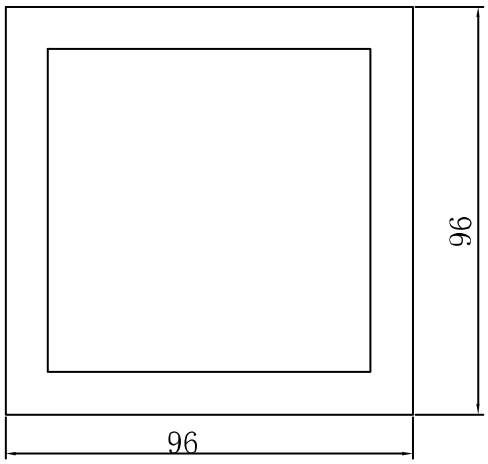
When any protection failure is suspected to exist (for example, it presents external visible damages),the instrument must be immediately powered off. In this case contact a qualified service representative.

4.1.- Installation

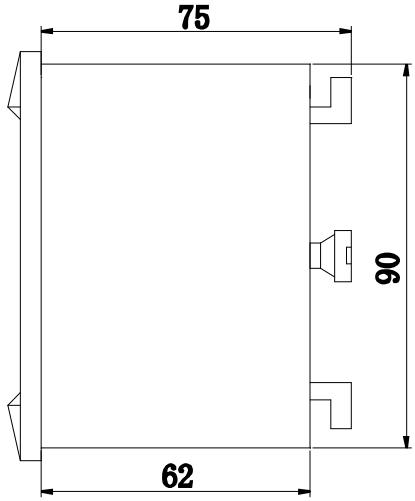
Mounting

Instrument is to be mounted on panel (cut-out *91+0.8 x 91+0.8 mm*). Keep all connections into the cabinet.

Note that with the instrument powered on, the terminals could be dangerous to touch and cover opening actions or elements removal may allow accessing dangerous parts. Therefore, the instrument must not be used until this is completely installed.



Front view



Side view

Notes:

Input signal: BJ194Y using a separate acquisition calculate for each measurement channel, to ensure consistent in use, for different load forms, its a variety of connection mode. Access wire shall be met: the current 2.5 square mm, voltage of 1.5 square millimeters.

A. Voltage input:

Input voltage should not exceed the rated input voltage products (100V or 400V),
Otherwise, you should use external CT. Suggest 1A fuse be installed in the voltage input side.

B. Current Input:

Standard input current is 5A, if greater than 5A should use external CT.
When the CT is connected with other instruments, make sure wiring methods be used in series.

Before remove the current input connection, must be sure to disconnect the primary circuit or shorted secondary circuit of CT. In order to facilitate disassembly, please do not connect to CT directly, and the terminal block is suggested.

C. Please make sure that the input voltage and current corresponding to the same phase sequence, and the same direction; Otherwise, the Values and symbols will be wrong!! (Power and Energy)

The input network configuration of instrument depends on the CT number of the system:
in the condition of 2 CT, select the three-phase, three-lines two components;
in the condition of 3 CT, select the three-phase, four-lines three component mode.

Instrument connection mode, set of the instrument (programming input network NET) should be the same load wiring as measured wiring. Otherwise, the measurement instrument will lead to incorrect voltage or power.

In three-phase three-wire mode, the measurement and shows the line voltage;
In three-phase four-wire mode, the measurement and shows the phase voltage.

Auxiliary power:

BJ194Y Series Power Analyzer with universal (AC / DC) power input, if not for a special statement, we provide the 220VAC/DC or 110VAC/DC power interface for standard products. Instruments limit work power supply: AC / DC: 80-270V, please ensure that the auxiliary power can match with BJ194Y series meter to prevent damage to the product.

A. Suggest install 1A fuse in the fire line side.
B. For the areas with poor power quality, suggest install lightning surge suppressor and rapid burst suppressor to prevent lightning strikes.

4.2. - Connection Terminal

Upper connection terminal

15	16	50	49	48	47	60	59	58	2	1
AO-	AO+	RP-	RP+	AP-	AP+	GUD	RS485B	RS485A	Power supply	

*1. *Supply voltage input: 0 V*
*2. *Supply voltage input: 220 Va.c.*
58. RS-485 (+)
59. RS-485 (-)
60. RS-485 (GND)
47. Active energy pulse output (+)
48. Active energy pulse output (-)
49. Reactive energy pulse output (+)
50. Reactive energy pulse output (-)
16. Analog output (+)
15. Analog output (–)

Middle connection terminal

22	21	20	19	70	71	72	73	74
DO2		DO1		COM	DI1+	DI2+	DI3+	DI4+

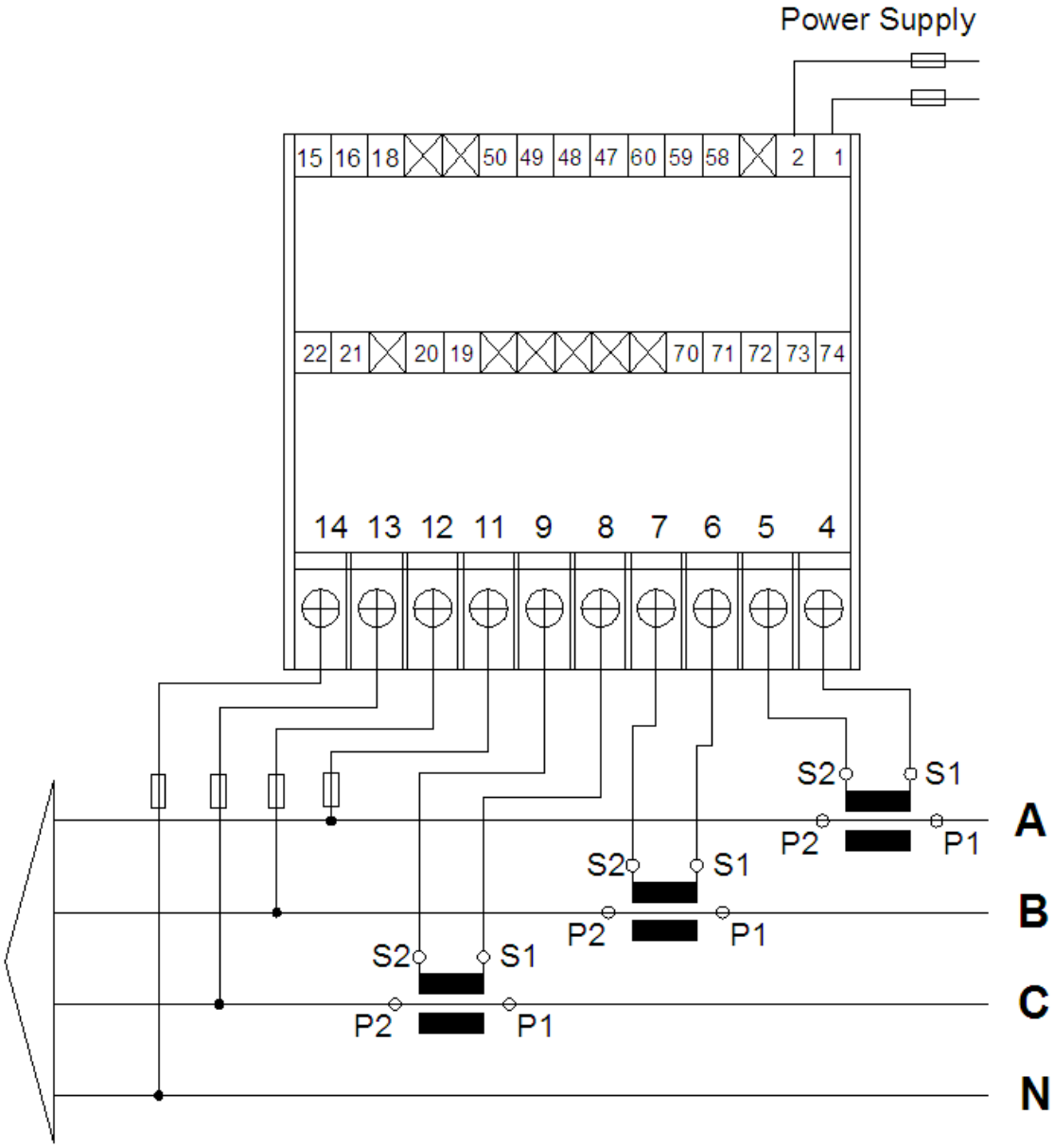
20. Route 1 digital output (+)
19. Route 1 digital output (-)
22. Route 2 digital output (+)
21. Route 2 digital output (-)
*70. Digital input **COM** pin*
71. Route 1 digital input (+)
72. Route 2 digital input (+)
73. Route 3 digital input (+)
74. Route 4 digital input (+)

Lower connection terminal

14	13	12	11	9	8	7	6	5	4
Un	Uc	Ub	Ua	C-phase Current		B-phase Current		A-phase Current	

4. Current A-phase - S1 input
5. Current A-phase - S2 input
6. Current B-phase - S1 input
7. Current B-phase - S2 input
8. Current C-phase - S1 input
9. Current C-phase - S2 input
11. Voltage A-phase input
12. Voltage B-phase input
13. Voltage C-phase input
14. Neutral Voltage input

4.3. - Connection Drawing



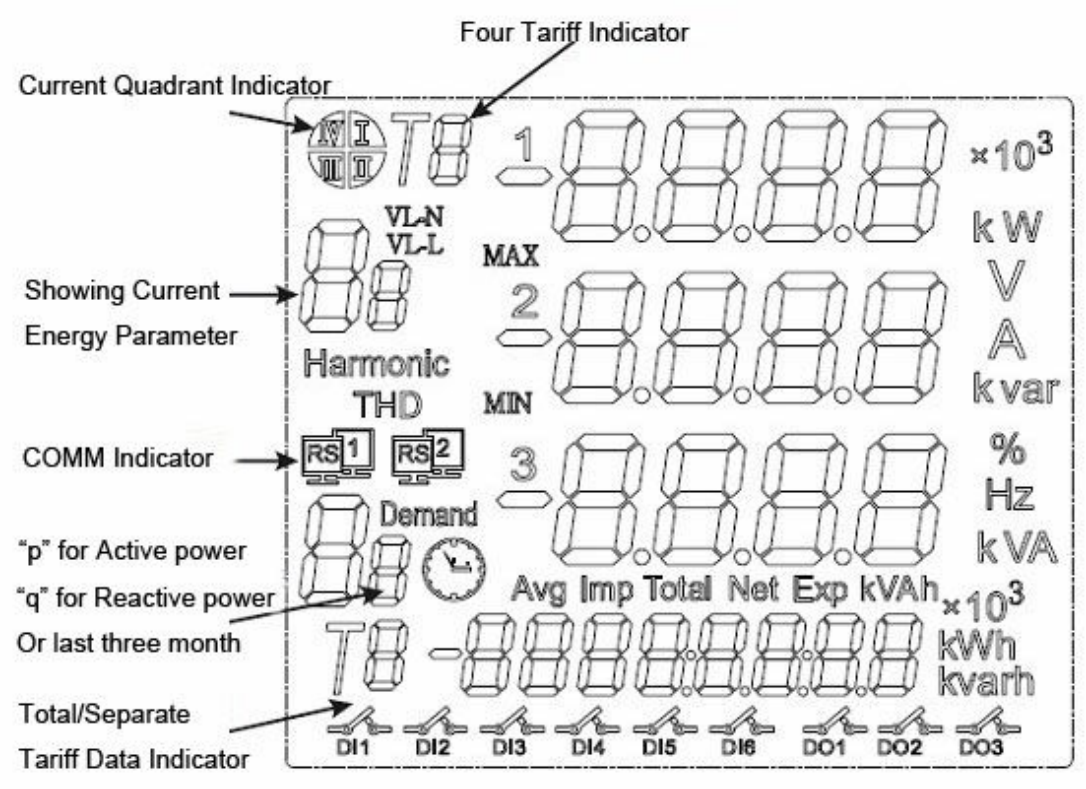
IMPORTANT REMARK!

If power = -0.01 is shown for any of the phases and voltage and current are not zero for this phase, check out following points:
- Assure that A, B and C phases coincide in voltage and current.
- Correct polarity? Reverse the current transformer placed at this phase.

Note: This connection drawing is for reference only, the actual connecting terminal please refer to the label on the rear part.

5. SCREEN DISPLAY

5.1. - Panel Diagram



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Note: Please see detail instructions of "*" items at "**OPERATION MODE".**

6. - OPERATION MODE

When the 194Y-9SY is powered up, the entire symbol will be on, and the meter starts to self-test. After some seconds, the meter is ready for operation and shows one of the available screens.

Parameters on display can be switched by pressing key or LCD shown on screen at any moment

When the key is pressed, the screen CURRENT values of each phase are now showing.

Pressing again the key , the screen will show the following parameters successively.

In setting menu, pressing can move the setting cursor to left;
Pressing can enter the number 0 ~ 9.

This key named "SET" key, pressing it can open the programming menu and return to previous menu.

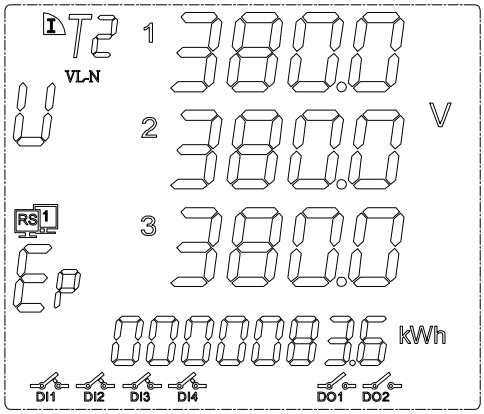
This key named “Enter” key, pressing this key you can exit it with saving any modification that you might have done, in menu operation press “Enter” key, and user can go to the next menu.

Note:

Press key or in normal standby status, and the meter will show different data in main screen:

In the menu set mode, when changes the parameter and exit setting, the meter will ask to "SAVE", press *exit without saving*
press *save and exit.*

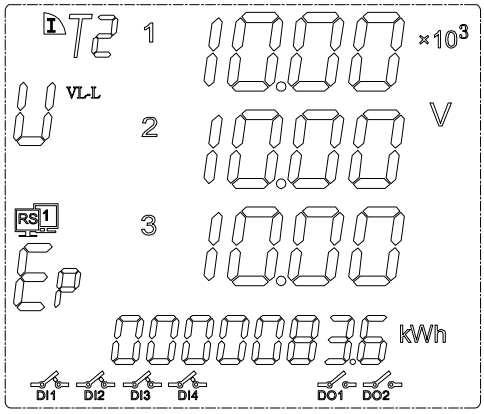
Screen 1: Displays the three phase voltage Ua, Ub, Uc;
As shown: Ua = 380.0V; Ub = 380.0V; Uc = 380.0V;



In the bottom character “Ep” show **total active energy** is 83.6KWh.

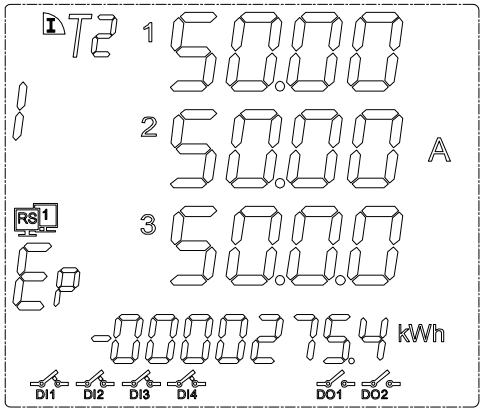
In other display area region show the system information:
DI1, DI2, DI3, DI4 in the close state;
DO1, DO2 in the open state;
Communication transceiver normal;

Note: Detail information for each symbol, please refer **chapter 5,** following sections as same



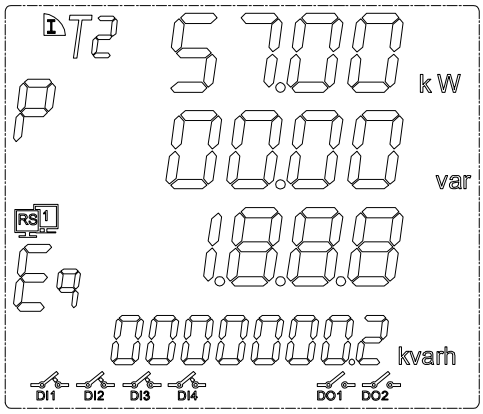
Note: in the high voltage measurement, X10^3 mean the showing voltage value multiplied by 1000, in the screen diagram mean the voltage is 10X1,000=10,000volt

Screen 2: Display the three-phase current Ia, Ib, Ic.
In the bottom **Ep** shows **total negative active energy**.



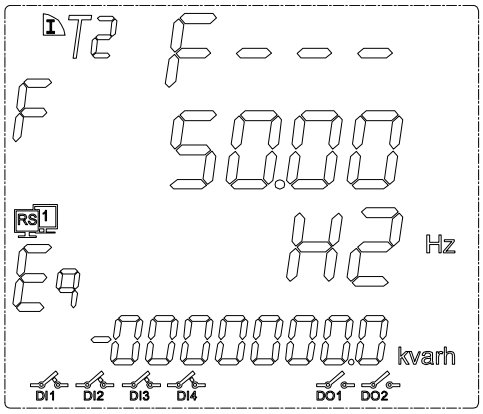
Screen 3: Display the total active power, total reactive power, and total factor.
In the bottom "**Eq**" shows **total active energy**.

Note: In power data screen, user can press key " " switch show:
Independent three phase active power;
Independent three phase reactive power;
Independent three phase e powerfactor.



Screen 4: Display the frequency of a phase.

In the bottom "**Eq**" shows **total negative reactive energy**.

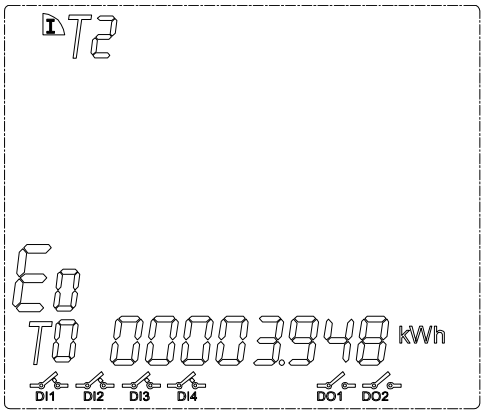


Screen 5: Display the 4 tariff energy data.

In the **top screen** "T1"~"T4" indicate current showing tariff.
In diagram show tariff_2

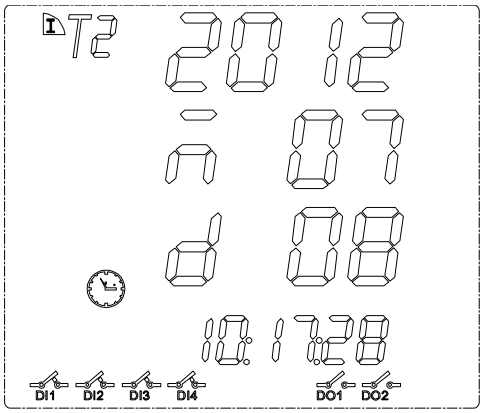
E0~E3 indicate the last three month
E0: Three month total energy data
E1: Last month energy
E2: Last month energy
E3: Month before last month energy

In the **bottom screen** "T1"~"T4" indicate the energy sum data in each tariff.



Note: Press key " " can switch show other energy data

Screen 6: Display real-time clock,



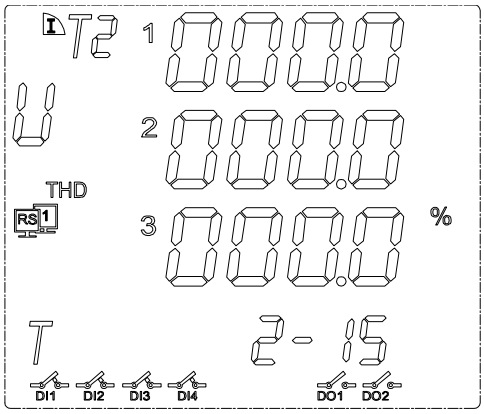
The first line shows year,

Second line shows month,

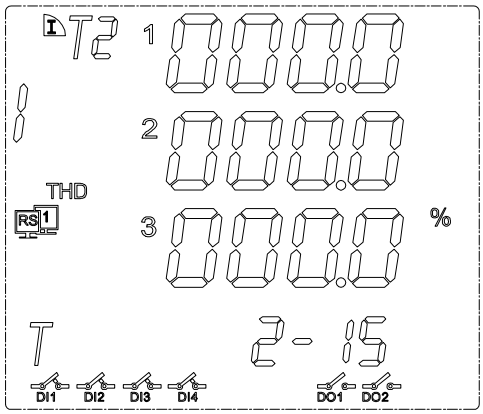
Third line shows date;

In the bottom line shows:
Hour, minute and second.

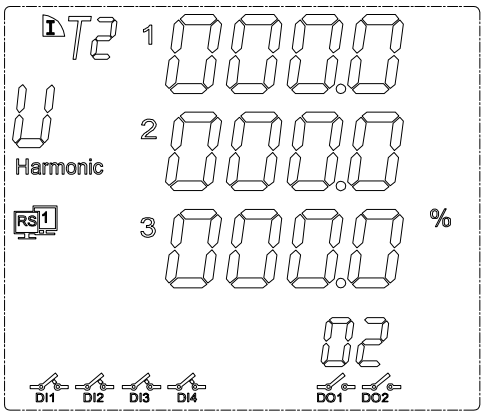
Screen 7: Display the voltage THD%.



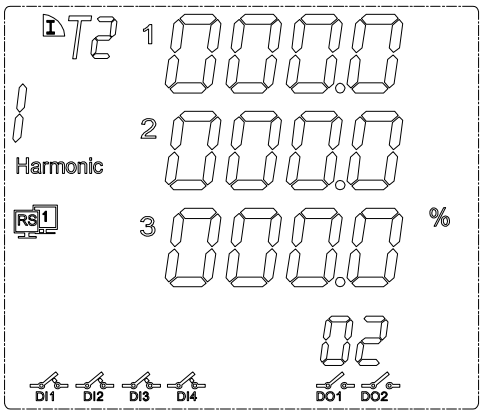
Screen 8: Display the current THD%.



Screen 9: Display voltage harmonic data, press can show the 2~15 times data.



Screen 10: Display current harmonic data, press can show the 2~15 times data.



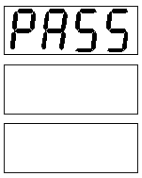
7. - SETUP PROCEDURE

The SETUP procedure of the BJ194Y-9SY is performed by means of several SETUP options. Once into the SETUP, use the keyboard to select different options and enter required variables:

7.1.- Input Password

A 4-figure password is required to be entered (in case that in case that the meter will work without permission.)

At normal display mode, press to enter the programming mode, meter display

Meter display “  ”,

Ask for the password. Press to input the password number, from “0~9”. Press to move the cursor . After password switch press to confirm the input.

If password is correct, meter can enter next setting.

Notes: the default password is 0001.

7.2. - Input Signal Selection

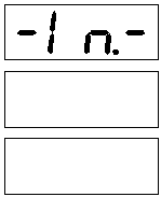
Press , return to level 1 menu.

In this section, user will set:.

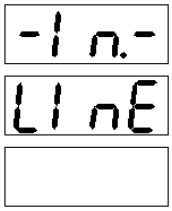
1. Input net mode;
2. Voltage measure range;
3. Current measure range;
4. Voltage transformation ratio;
5. Current transformation ratio.

7.2.1.- Choice the input net mode

In level 1 menu, use ⟪ and ⟫ to choose item “-IN-”, and the meter shows like this:

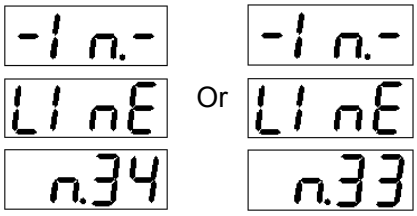


then press ⟱ , enter the level 2 menu, choose “LINE”, meter shows:



Then press ⟱ again, enter the level 3 menu.

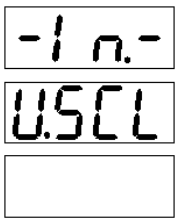
Use ⟪ and ⟫ to select the right wiring mode, meter shows like this:



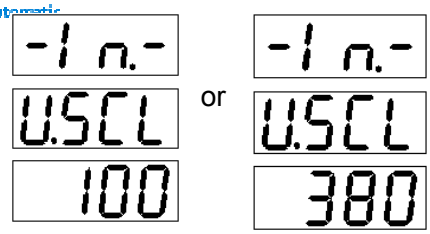
Note: Selecting the wiring mode must match with actual wiring, or the reading data will go wrong.

7.2.2.- Voltage measure range

In level 1 menu of “-IN-”
Choose item “U.SCL”, and the meter shows like this:



then press ⟱ , enter the level 3 menu, user can see the voltage range:

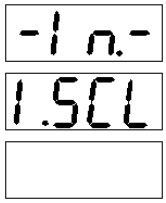


100V: Maximum measured value is 100V
380V: Maximum measured value is 380V

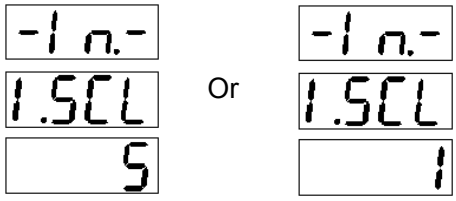
Note: A different range will affect the accuracy of measurements. If the accuracy is 0.5.
Select 100V range, means the minimum scale value is 0.5V (100 x 0.5%);
Select 380V range, means the minimum scale value is 1.9V (380 x 0.5%).

7.2.3.- Current measure range

In level 1 menu of "-IN-".
Choose "I.SCL", meter shows like this:



then press , enter the level 3 menu, user can see the current range:

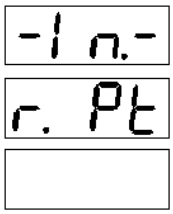


5A: Maximum measured value is 5A.
1A: Maximum measured value is 1A.

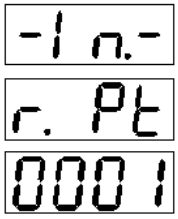
Note: Select a different range will affect the accuracy of measurements, if the accuracy is 0.5.
Select 1A range, means the minimum scale value is 0.005A (1 x 0.5%);
Select 5A range, means the minimum scale value is 0.025A (5 x 0.5%).

7.2.4- Voltage transformation ratio

In level 1 menu of "-IN-".
Choose item "r.PT" , meter shows like this:



then press , enter the level 3 menu, allowing us to set the current transformer.

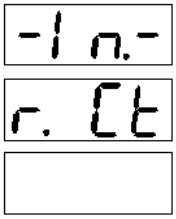


Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999.

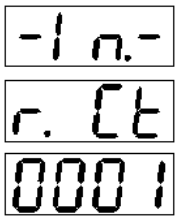
Note: The input values represent the voltage transformer (primary side voltage) / (secondary side voltage).
Secondary side voltage is 100V or 380V; user set it at section **7.2.2**

7.2.5. - Current transformation ratio

In level 1 menu of “-IN-”.
Choose the item “r.CT”, meter shows like this:



then press , enter the level 3 menu, allowing us to set the current transformer.



Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999.

Note: The input values represent the current transformer (primary side voltage) / (secondary side current) .
Secondary side current is 1A or 5A, user set it at section **7.2.3**

7.3. - Communication Preferences

Press , return to level 1 menu.

In this section, user will set:

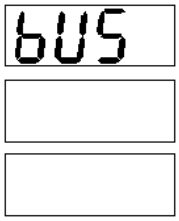
1. Meter communication address;
2. Baud rate;
3. Communication format.

Note: Not all the meter have communication function, please make sure your purchase meter first, if no communication mode, you can skip this section.

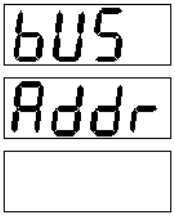
7.3.1. - Meter communication address setting

One or some BJ194…meter can be connected to a P.C. With this system we can get all the parameters in one central point of reading. The BJ194..., has a serial RS-485 or RS-232 type output (according to the model). If we connect more than one device to the same communication line (RS-485), we have to assign to each of them a different code or direction (from 1 to 247), since the P.C. needs the identification of every measuring point.

In level 1 menu, choose the item “bus”, the meter shows like this:



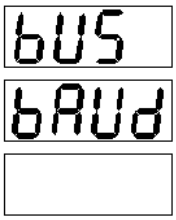
Then press , enter the level 2 menu, choose the item “Addr”, the meter shows like this:



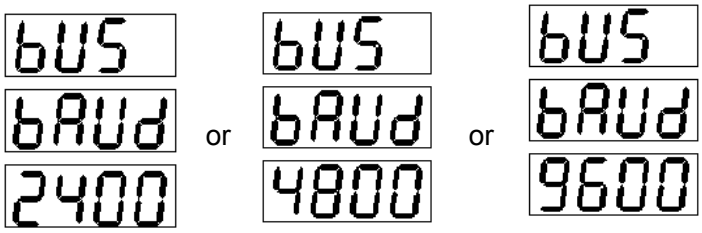
Press to input the number, from “0~9”. Press to move the cursor. After password, press to confirm the input, value is 1~9999.

7.3.2.- Communication Baud rate setting

In level 1 menu of “bus”.
Choose item “BAUD”, and the meter shows like this:

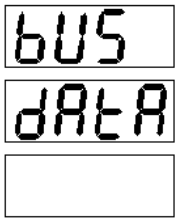


Then press , enter the level 3 menu, allowing us to set the Baud rate 2400, 4800 or 9600.

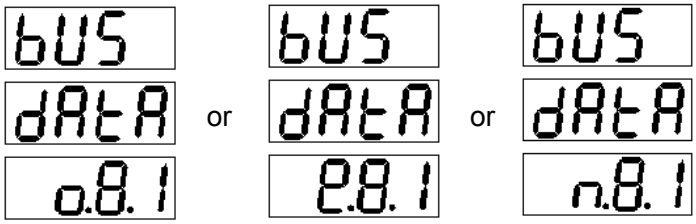


7.3.3.- Choose communication format

In level 1 menu of “bus”.
Choose item “data”, and the meter shows like this:



Then press , enter the level 3 menu, allowing us to set the communication data format. **(Factory setting n.8.1)**



7.4. - Digital Output Setting

Press , return to level 1 menu.

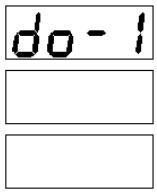
In this section, user will set:

1. Digital output type;
2. Output delay;
3. Choose the electrical parameter;
4. Set the alarm value
5. Set the hysteresis value

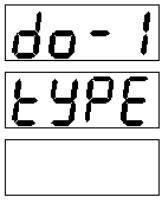
Note: If the meter have more than one channel digital output, you can set the DO-2,DO-3…as the following step, please select the appropriate output settings in the level 1 menu,.

7.4.1. - Output type

In level 1 menu, use and to choose item “DO-1”, and the meter shows like this:

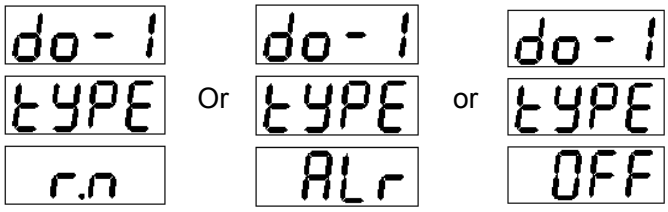


then press , enter the level 2 menu, choose “TYPE”. The meter shows:



then press again, enter the level 3 menu.

Use and to select the output type, meter shows like this:



r.n: Mean remote control mode, there have ***pulse*** and ***level*** output mode, more detail refer chapter **7.4.2**.

Host inquiry:

01	05	00 01	FF 00	DD FA
Address	Code	Relay address	Relay value (FF00:close; 0000: open)	CRC

Slave answer

01	05	00 01	FF 00	DD FA
Address	Code	Relay address	Relay value (FF00:close; 0000: open)	CRC

RS485 communication please refer to RS485 protocol document.

ALr: Mean directly alarm mode
OFF: Mean the relay will not work

7.4.2. - Set output delay

In level 1 menu of “DO-1”.

Choose item “DELY”, and the meter shows like this:

Then press , enter the level 3 menu, user can set the delay value:

Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999. **(Default 0010)**

Note: The setting of relay value is indicating the width pulse output; value “0000” is for level output. The setting value resolution is 100ms, which means “0001” is 100ms, “9999” means 999.9s. **0 for level output, 1~9999 for pulse output**

7.4.3. - Choose the electrical parameter

In level 1 menu of “DO-1”.

Choose item “PArA”, meter shows like this:

then press , enter the level 3 menu, user can choose the output parameter:

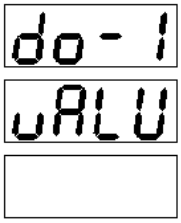
Note: There are two alarm mode, indicate with “**XX-H**” and “**XX-L**”,
“**XX-H**” mean the rising edge alarm;
“**XX-L**” mean the falling edge alarm;

Example: “IA-H” mean when the A-phase current is rising to a certain value then output alarm.
“I3-H” mean when one phase of A, B, C phase current is rising to a certain value then output alarm.
“PS-L” mean when Three-phase total power is falling to a certain value then output alarm.

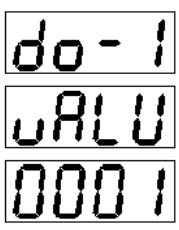
7.4.4. - Set the alarm value

In level 1 menu of “DO-1”.

Choose item “VALU”; meter shows like this:



then press , enter the level 3 menu, user can set the alarm value:



Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999. **(Default 5500)**

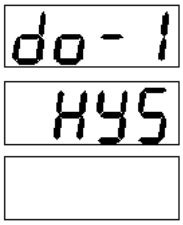
Note: Alarm value is about the secondary side value (such as AC100V, AC5A).

Voltage unit is 0.1V;	Reactive power unit is 0.1VAR;
Current unit is 0.001A;	Power factor Is 0.001;
Active power unit is 0.1W;	Frequency 0.01HZ;

7.4.5. - Set the hysteresis value

In level 1 menu of “DO-1”.

Choose item “HYS”, meter shows like this:



then press , enter the level 3 menu, and user can set the alarm value:

Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999. **(Default 5500)**

Note: hysteresis value is for preventing the relay repeated action.

Example: Alarm value 3.700A; hysteresis value 0.030A; Rising edge alarm

Measured value is 3.700A then relay action, output alarm;
When measured value is bellow 3.670A, the relay will be closed.

7.5. - Analog Output Setting

Press , return to level 1 menu.

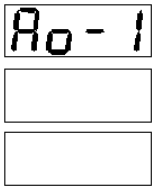
In this section, user will set:

1. Analog output type;
2. Choose the electrical parameter;
3. Set the zero value for transmission output;
4. Set the full scale value for transmission output.

Note: If the meter have more than one channel analog output, you can set the AO-2,AO-3…as the following steps, please select the appropriate output settings in the level 1 menu,.

7.5.1. - Output type

In level 1 menu, use and to choose item “DO-1”, meter shows like this:



then press , enter the level 2 menu, choose “LINE”, meter shows:

then press again, enter the level 3 menu.

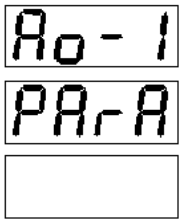
Use and to select the output type, meter shows like this:

Note: output type can choose 12~20mA,4~20mA,0~20mA (default is 12~20mA)

7.5.2. - Choose the electrical parameter

In level 1 menu of “AO-1”.

Choose item “PArA”, meter shows like this:



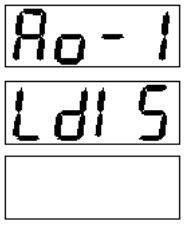
then press , enter the level 3 menu, user can choose the output parameter:

Note: The analog parameter can set Ia, Ib, Ic, Ua, Ub, Uc, P, Q, H, F; default is UA.

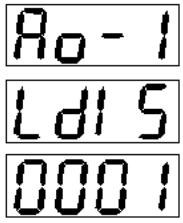
7.5.3. - Set the low value for transmission output

In level 1 menu of “AO-1”.

Choose item “LDIS”, meter shows like this:



then press , enter the level 3 menu, user can set the low value:



Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999. **(Default 0000)**

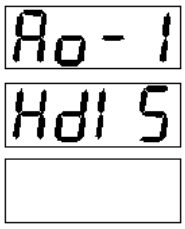
Note: Alarm value is about the secondary side value (such as AC100V, AC5A).

Voltage unit is 0.1V;	Reactive power unit is 0.1VAR;
Current unit is 0.001A;	Power factor Is 0.001;
Active power unit is 0.1W;	Frequency 0.01HZ;

7.5.4. - Set the full scale value for transmission output.

In level 1 menu of “AO-1”.

Choose item “HDIS”, meter shows like this:



then press , enter the level 3 menu, user can set the full scale value:

Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999. **(Default 5000)**

Note: Alarm value is about the secondary side value (such as AC100V, AC5A).

Voltage unit is 0.1V;	Reactive power unit is 0.1VAR;
Current unit is 0.001A;	Power factor Is 0.001;
Active power unit is 0.1W;	Frequency 0.01HZ;

7.5.5. - Example of analog output.

Set analog output:

TYPE 4-20mA;	**LdIS** 0000;
PARA select Ia;	**HdIS** 5000

This mean when A-phase current is 0.000A output 4mA, current is 5.000A output 20mA;

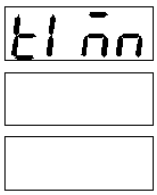
7.6. - Time and Date Setting

Press , return to level 1 menu.

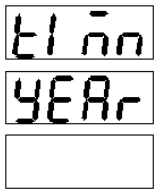
In this section, user will set the meter system time, which will affect the function of Muti-tariff:

7.6.1. - Set year

In level 1 menu, use and to choose item “TIME”, meter shows like this:



then press , enter the level 2 menu；choose “YEAR”, meter show:



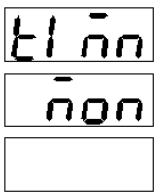
then press again, enter the level 3 menu.

Use and to select the year, setting value from 00-99:

7.6.2. - Set month

In level 1 menu of “TIME”.

Choose item “MON”, meter shows like this:



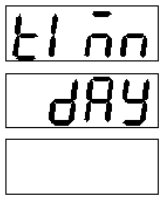
then press again, enter the level 3 menu.

Use and to select the month, with setting value from 1-12:

7.6.3. - Set week day

In level 1 menu of “TIME”.

Choose item “DAY”, meter shows like this:



then press again, enter the level 3 menu.

Use and to select the day, with setting value from 1-31:

7.6.4. - Set date

In level 1 menu of “TIME”.

Choose item “DATE”, meter shows like this:

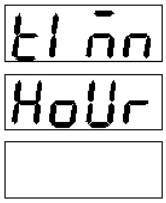
then press again, enter the level 3 menu.

Use and to select the week day, with setting value from 1-7:

7.6.5. - Set hour

In level 1 menu of “TIME”.

Choose item “HOUR”, meter shows like this:



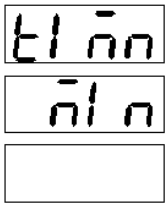
then press again, enter the level 3 menu.

Use and to select the hour, setting value from 00-23:

7.6.6. - Set minute

In level 1 menu of “TIME”.

Choose item “MIN”, meter shows like this:



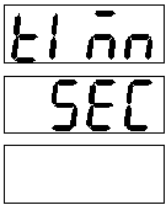
then press again, enter the level 3 menu.

Use and to select the minute, with setting value from 00-59:

7.6.7. - Set second

In level 1 menu of “TIME”.

Choose item “SEC”, meter shows like this:



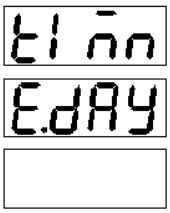
then press again, enter the level 3 menu.

Use and to select the second, setting value from 00-59:

7.6.8. - Set billing date

In level 1 menu of “TIME”.

Choose item “E.DAY”, meter shows like this:



then press again, enter the level 3 menu. Meter will show:

Use ⟪ and ⟫ to select the billing date:

Note: Default value is 0101, mean the billing date is At 1:00 on the 1st of each month.

So the setting value max is 3123, which means each month 31st, 23:00

Date : time

7.7. - Muti-tariff Setting

Press ⟪ , return to level 1 menu.

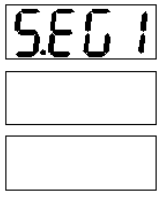
In this section, user will set:

1. Billing segment setting;
2. Ttariff setting

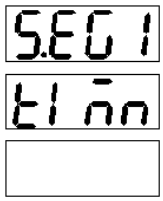
Note: BJ-194Y contains 12 billing segments, with the billing segment 1 setting method in this manual.

7.7.1. - Set the billing time of segment 1

In level 1 menu, use ⟪ and ⟫ to choose item “S.EG1”, and the meter shows like this:



Then press ⟫ , enter the level 2 menu, choose “TIME”. The meter shows:



Then press ⟫ again, entering the level 3 menu.

Use ⟪ and ⟫ to select the billing date.

Note: Default value is 0000, which means the billing date is at 00:00 on each day.

min : sec

Segment 1 is for the muti-tariff starting time!!

7.7.2. - Choose the segment 1 billing tariff

Note:

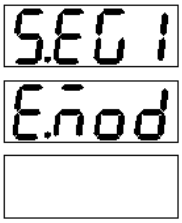
BJ194Y provides 3 months of energy data; use ***"Sharp" "Peak" "Flat" "Valley"*** (**T1~T4**)to calibrate the total energy data. Users can get monthly energy data from panel display or RS485(RS485 data refer to **Communication protocol**), and calculate their energy cost.

.

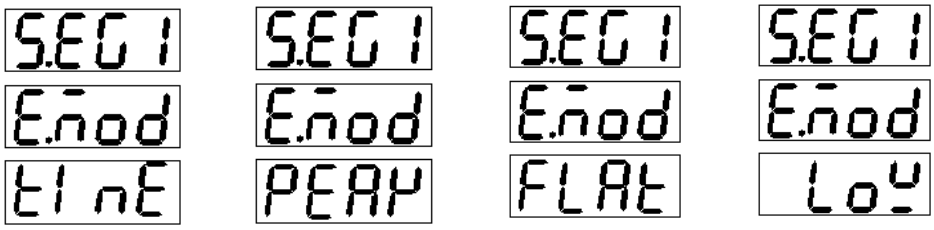
You can set up 12 billing segment in one day. The segment 1 setting steps are as follows, and other segment setting method is the same.

In level 1 menu of "S.EG1".

Choose item "E.Mod", meter shows like this:



then press ⟫ , enter the level 3 menu, user can choose the billing mod:



Note: Above mean: Sharp, Peak, Flat, Valley.

7.8. - System Setting

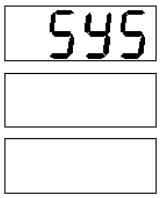
Press , return to level 1 menu.

In this section, user will set:

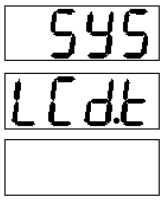
1. Backlight time of the LCD;
2. Clear energy counters;
3. Set display mode;
4. Change the password

7.8.1. - Set the LCD backlight time

In level 1 menu, use and to choose item “SYS”, meter shows like this:



then press , enter the level 2 menu, choose “LCd.t”, meter show:



then press again, enter the level 3 menu, Use and to select the value

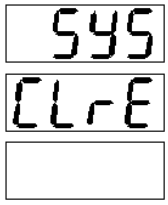
Note: Minimum step is 1 minute, 0005 for 5 minutes, which means if not any operation in 5 minutes, the backlight will turn off

Set value > 1000, the backlight always on;
Set value = 0000, the backlight always off.

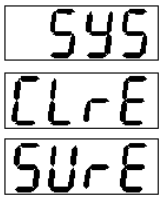
7.8.2. - Clear energy counters

In level 1 menu of “SYS”.

Choose item “CLr.E”, meter shows like this:



then press ⟱ again to confirm clear all the energy data, meter display:



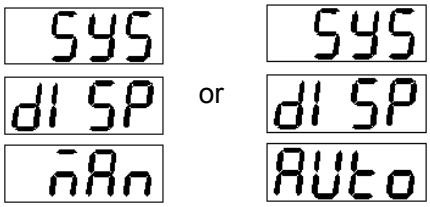
And then press ⟱ again, to save the operation and exit.
Press ⟰ without save and exit.

7.8.3. - Set display mode

In level 1 menu of “SYS”.

Choose item “dISP”, meter shows like this:

then press ⟱ , enter the level 3 menu, user can choose the display mode:

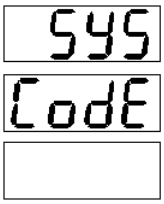


Note: Man means the screen display will change by press ⟪ and ⟫
Auto means the screen display will change in every 10 sec.

7.8.4. - Change the password

In level 1 menu of “SYS”.

Choose item “CodE”, meter shows like this:



then press again, enter the level 3 menu.
Use and to input the new password:

Note: *Please do not change the password, If necessary, please contact Blue Jay technical !!*

7.9. – Menu Structure

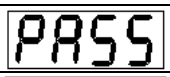
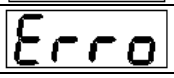
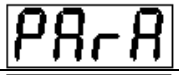
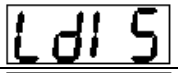
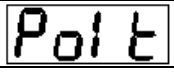
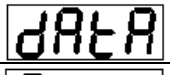
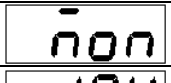
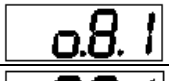
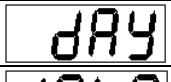
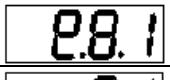
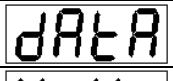
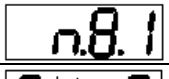
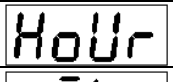
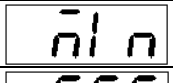
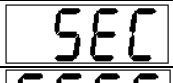
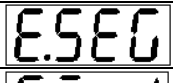
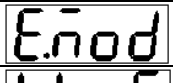
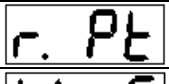
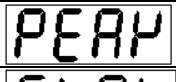
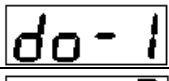
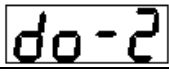
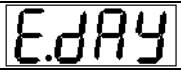
level 1	Level 2	Level 3	Description
(System setting) **SYS**	(LCD backlight time) **LCd.t**	0000~1000	Factory default is 0005
	(Clear energy counters) **CLr.E**		Unrecoverable for Clear data
	(Display mode) **dISP**	Manual or Automatic	Factory default is manual
	(Change the password) **CodE**	0000~9999	Default is 0001
(Signal input) **-IN-**	(Net) **Lin.e**	N.3.4, N.3.3, N.1	Select the input signal network measurement
	(Voltage Range) **U.SCL**	100V, 220V, 380V	Select the range of measured voltage signal
	(Current Range) **I.SCL**	5A and 1A	Select the range of measured current signal
	(Voltage transformation ratio) **R.PT**	1-9999	Setting voltage signal transformation ratio = 1 / 2 scale
	(Current transformation ratio) **R.CT**	1-9999	Setting current signal transformation ratio = 1 / 2 scale
(Communication Parameters) **bUS**	(Address) **ADDR**	1-247	Instrument address range 1-247
	(Communication speed) **BAUD**	4800~9600	Default is 4800
	Protocol **DATA**	o.8.1; e.8.1; n.8.1	Factory default communication mode for the word (**n.8.1**)
(Digital output setting) **DO-1**	(Output type) **TYPE**	**r.n, Alr, OFF**	Default is **Alr**
	(Set output delay) **DELY**	0000~9999	Default is 0010
	Choose the electrical parameter **PArA**	**I3-H, PS-H...U3-H**	Default is I3-H
	(Set the alarm value) **VALU**	0000~9999	Default is 0050
	hysteresis value **HYS**	4800~9600	Default is 4800

(Analog Output Setting) **AO-1**	(Output type) **TYPE**	**12.20, 4-20, 0-20**	Default is 12.20
	Choose the electrical parameter **PArA**	**UA,UB,UC…FR**	Default is UA
	(low value for transmission output) **LdIS**	0000~9999	Default is 0000
	full scale value for transmission output **HdIS**	0000~9999	Default is 5000
(Time setting) **TIME**	(Year) **YEAR**	00~99	Default is 20XX
	(Month) **MON**	1~12	
	(Week day) **DAY**	1~7	
	(Date) **DATE**	1~31	
	(Hour) **HOUR**	00~23	
	(Minute) **MIN**	00~59	
	(Second) **SEC**	00~59	
	(Dilling date) **E.dAy**	0101~3123	Default is 0101

level 1	Level 2	Level 3	Level 4	Description
(Muti-tariff Setting) **E.SEG**	(Billing date of segment 1) **S.EG1**	Billing time of segment 1 (**TIME**)	**Default 0000**	
		Segment 1 billing tarfiff (**E.Mod**)	(Sharp) **TinE** (Peak) **PEAK** (Flat) **FLAt** (Valley) **LOW**	
	…	…	**…**	
	…	**…**	**…**	
	(Billing date of segment 12) **S.EG12**	Billing time of segment 12 (**TIME**)	**Default 0000**	
		Segment 1 billing tarfiff (**E.Mod**)	(Sharp) **TinE** (Peak) **PEAK** (Flat) **FLAt** (Valley) **LOW**	

Note: Not all 194Y series power analyzer have the complete menu settings, Please confirm your purchased power analyzer has the corresponding extension module. Without the module, the corresponding part of the menu is not valid.

7.10.- Display Character instructions

	User passwords		System parameter settings
	Input error		Choose Setted parameter
	User settings menu		The corresponding parameters
	Communication settings menu		Set the alarm value
	Shows scal input value		Show Low alarm setting
	Set the decimal point		Show High alarm setting
	Communication parameter setting		System password
	Metter address setting		Year
	Baud rate		Month
	8 data bits, 1 stop bit, even parity		Week day
	8 data bits, 1 stop bit, odd parity		Date
	8 data bits, 1 stop bit, no parity		Hour
	Confirm the change		Minute
	Input voltage range selection		Second
	Input current range selection		Tariff segment
	Set CT ratio		Tariff
	Set PT ratio		Sharp
	Select phase		Peak
	Route 1 switch output settings		Flat
	Route 2 switch output settings		Valley
			Billing day

8.- PULSE OUTPUT

BJ-194Y power analyzer provides 2 routes pulse output for the total active energy and total reactive energy.

The host/PLC/DI module can cumulative the data of both the active and reactive power energy sent by the pulse from optocoupler relay.

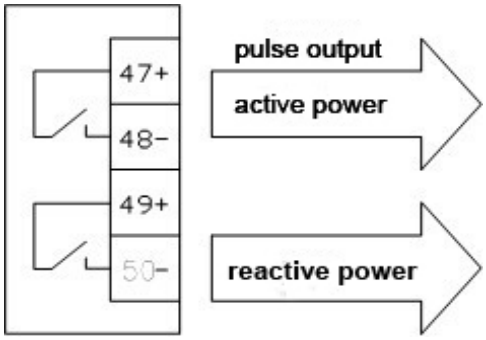
1). Electrical specification: voltage VCC ≤ 48V, Iz ≤ 50mA.

2). Pulse: 5000 imp / kWh, pulse upto 80ms.
This means: When the meter detect 1 kWh, the meter output 5000 pulse

Note: 1 kWh energy is for *secondary side energy data*, if there have PT and CT accessed; primary side energy data is “1 kWh ×PT ratio× CT ratio”.

For example: In measure time “T”, the received total pulse is “N”,
Primary side input of voltage is 10Kv
Primary side input of current is 400A.
Secondary side measurement range is 100V and 5A.

In the time “T”, energy accumulated is : N/5000 × 100 × 80



9. - SAFETY CONSIDERATIONS

All installation specification described at the previous chapters named: **INSTALLATION AND STARTUP, INSTALLATION MODES and SPECIFICATIONS.**

Note that with the instrument powered on, the terminals could be dangerous to touching and cover opening actions or elements removal may allow accessing dangerous parts. This instrument is factory-shipped at proper operation condition.

10. - MAINTENANCE

The 194Y does not require any special maintenance. No adjustment, maintenance or repairing action should be done when the instrument is open and powered on, should those actions are essential, high-qualified operators must perform them.

Before any adjustment, replacement, maintenance or repairing operation is carried out, the instrument must be disconnected from any power supply source.

When any protection failure is suspected to exist, the instrument must be immediately put out of service. The instrument's design allows a quick replacement in case of any failure.

11. - TECHNICAL SERVICE

FAQ's

1. The BJ-194Y Power Analyzer, once cabled and connected is seen to give a correct voltage and current reading, but shows negative values for active power (generation).

This is an error with the cabling for the current transformer secondary; the direction of the transformer current has to be respected as shown in the connection diagram. The current transformers have a two face primary; the current must pass from P1 to P2 giving the result in secondary (S1 and S2) of 5 amps.

The error stems from:

a). The current transformers have been incorrectly installed. As a result it gives the direction of the current as passing from P2 to P1; to resolve this problem, the current transformer does not have to be dismantled and installed again, but the transformer secondary (S1 and S2) just has to be inverted.

b). The connection of the current secondary in the current transformers have been incorrectly connected; to resolve this problem just connect the S1 transformer secondary to the S1 on the meter and the S2 on the current transformer to the S2 on the meter

2. The BJ-194Y, once cabled and connected, is seen to give an incoherent Power factor and CosΦ reading (-0.01 or similar).

This is again a current transformer and voltage phase connection error phase A, must correspond to the current transformer installed in phase A; phase B, must correspond to the current transformer installed in phase B; and phase C, must correspond to the current transformer installed in phase C.

This connection is clearly shown on the back of the analyzer.

3. The BJ-194Y is measuring in average voltage and is displaying the secondary voltage (for example 110 volts).
Ensure that the voltage Transformer ratio has been correctly set (see section on **chapter7**).

4. The BJ-194Y does not correctly display the current reading. It shows values varying between 0 to 5 amps of current.
Ensure that the Transformer ratio has been correctly set; once correctly set the current measurement shall be shown correctly (see section on **chapter7**).

For any inquiry about the instrument performance or any failure,
contact to Blue Jay's technical service.

Blue Jay - After-sales service

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